SCIENTIFIC SERIALS

THE most recent numbers of Trimen's *Journal of Botany* (224-232) run rather strongly on phanerogamic, descriptive and geographical botany. The diligence of English observers seldom fails to add two or three species to the British flora every year, either by absolute discovery, or by the separation of well-marked varieties. Three of these are described and figured in the numbers before us, viz. *Spartina Townsendi*, Groves, *Agrostis nigra*, With., and *Senecio spathulæfolius*, DC. There are various other descriptions of critical forms, and papers on the flora of English districts or of foreign countries; also on British Characeæ, and on marine Algæ new to Devon and Cornwall. Among the more interesting illustrations are two coloured plates of *Cinchona Ledgeriana*, a new species described by Dr. Trimen. —The number for April, 1882, contains an interesting paper by C. P. Hobkirk, on the development of *Osmunda regalis* from the prothallium, and several contributions to the extended controversy on the principles of botanical nomenclature.

THE *Bulletin of the Torrey Botanical Club* continues to be well supported by such writers as Mr. G. Farlow, W. Trelease, T. Meehan, H. W. Ravenel, D. C. Eaton, G. E. Davenport, C. E. Bessey, and others; and indicates the careful manner in which botanical science is cultivated on the other side of the Atlantic. The papers have chiefly a local value, though there are several on morphological points of more general interest.

Bulletin de la Société Impériale des Naturalistes de Moscou, No. 2, 1882.—Studies on the fauna of terrestrial and fluviatile molluscs of Moscow, by C. Milachevitch.—The Amphibiæ and Reptiles of Greece, by Dr. Jacques von Bedriaga.—List of phanerogams and vascular cryptogams observed in the Government of Tula, by B. J. Zinger (with 2 plates).—Materialia ad zoographiam Ponticam comparatam, by V. Czerniavsky (with a plate).—On the phanerogamous flora of the Government of Moscow, by A. A. Fischer von Waldheim.—On Devonian fossils at the Shelon River, by H. Trautschold (with a plate showing the new species, *Tentaculites ghaber*, *Aulopora arborescens*, *Chætetes intricatus*, and *Stromatopora Porchovensis*).—Annual report of the Society, and minutes of proceedings.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, March 30.—"Description of Portions of a Tusk of an Australian Proboscidian Mammal (*Notelephas australis*, Ow.)." By Prof. Owen, C.B., F.R.S.

The author premised a quotation from the work by Count Strzelecki, entitled "Physical Description of New South Wales, and Van Diemen's Land"; 8vo, 1845, p. 312; in which the Count states that he had bought of a "native," employed at Boree, the station of Capt. Ryan, New South Wales, a molar of a *Mastodon*, of which the vendor stated that "similar ones, and larger still, might be got further in the interior." This tooth was submitted by the Count to Prof. Owen, and was by him provisionally named *Mastodon Australis*. In subsequent extensive correspondence leading to the acquisition of the fossils from a wide range of Australian localities, described in successive volumes of the *Philosophical Transactions*, stress had been laid on the possibility of additional and more decisive evidence of a true proboscidian mammal having left its remains in the formations or caverns whence the marsupial fossils had been derived; but, as more than thirty years elapsed without the acquisition of such evidence, the author could add nothing to Count Strzelecki's original announcement.

Early in the present year he received portions of a tusk discovered or obtained by the late Mr. F. N. Isaac, in a "drift deposit" of a ravine in a district of Darling Downs, about sixty miles to the eastward of Moreton Bay, Queensland, Australia. Prof. Owen had previously received fossils from that gentleman, and the present, apparently Mr. Isaac's latest acquisition, was kindly placed in the Professor's hands by Mr. E. Thurston Holland, nephew of Mr. Isaac.

In his paper the author points out the several characters of true ivory presented by the portions of tusk, including those displayed in microscopic sections. Drawings of these sections, as seen under requisite magnifying powers, and others of the tusk, of the natural size, accompany the descriptions.

The tusk is one from the upper jaw, including a portion of the base and pulp-cavity; and, on the supposition that it has come from a mature animal, it indicates an elephant or mastodon of somewhat smaller size than the existing species of India and Africa.

The wide distribution of elephantine quadrupeds in Africa, throughout an extensive latitudinal range in Asia and Europe, also in both North and South Americas, indicates that at the periods when forest-growths were undisturbed by mankind, the huge quadrupeds deriving sustenance from the leaves, fruit, and tender branches of trees were coextensive therewith. Australia seemed to offer an exception, but the subject of the present paper justifies the belief in the further extension of the hugest land mammals over the tree-bearing surfaces of the earth.

Further quest in the localities indicated by Count Strzelecki, and more definitely made known by Mr. Isaac's discovery, may, it is hoped, be rewarded by the much-desired materials for extending our knowledge of the characters of *Notelephas*.

Mathematical Society, April 6.—S. Roberts, F.R.S., president, in the chair.—Messrs. Buchheim, Muir, and C. Smith were admitted into the Society.—The following communications were made:—The Algebraic solution of the modular equation for the septic transformation, G. S. Ely.—Note on the condensation of skew determinants which are partially zero-axial; and on a symmetric determinant connected with Lagrange's interpolation problem, T. Muir.—On the analogue to the addition-equation for Theta functions, Rev. M. M. U. Wilkinson.—On the general equation of the second degree referred to tetrahedral coordinates, Rev. A. J. C. Allen.—On certain loci and envelopes belonging to triangles of given form inscribed and circumscribed to a given triangle, Prof. Wolstenholme.—On binomial biordinals, Sir J. Cockle, F.R.S.—On the coordinates of a plane curve in space, H. W. Lloyd Tanner.—On Polygons circumscribed about a cuspidal cubic, R. A. Roberts.

Physical Society, March 25.—Prof. Clifton, president, in the chair.—New Members: Mr. M. J. Jackson, B.A., Mr. Nazarus Fletcher, British Museum.—Mr. Shellford Bidwell read a paper on the electric resistance of a mixture of sulphur and carbon. These experiments were begun in December, 1880, to ascertain if the mixture in question was sensitive to light like selenium. Sulphur was melted and mixed with powdered plumbago (the best proportions being 20 parts by weight of the sulphur to 9 parts of the plumbago. The mixture was poured into moulds, and quickly cooled, yielding plates and sticks. When exposed to the light of a gas-flame, an increase in resistance was noticed, and was proved to be due to the heat of the flame, not the light, by experimenting with different sources of light and coloured screens of glass. As both carbon and sulphur decrease in resistance under heating, the opposite effect of the mixture is anomalous, and Mr. Bidwell explains it by supposing that the mixture is mechanical, and that heat expanding the size of the insulating sulphur crystals, separates the conducting carbon particles further apart, and increases the resistance of the mass. Cells of this compound were made like selenium cells by spreading it between the parallel turns of two fine platinum wires wound round a mica plate and the rise of resistance for temperature carefully measured. At 14° C. the resistance was 9100 ohms; at 55° C. it was 5700 ohms, and the rise was in greater ratio than the rise of temperature. Mr. Bidwell also found that these cells would transmit speech when connected in the circuit of a battery and a Bell telephone. They also acted as a thermoscope, when employed after the manner of a thermopile. Mixtures of shellac and graphite, of paraffin and graphite, &c., were also tried with like results. In reply to Prof. Macleod, Mr. Bidwell said the resistance of the cells decreased soon after being made. Mr. Bidwell also stated, that acting on a suggestion of Dr. Hopkinson, he had found that the resistance diminished under a more powerful current force.—Mr. C. V. Boys read a paper on a new method of finding the index of refraction of lenses, based on the general principle employed by Foucault, of causing the ray of light to return on the same path. Prof. Clifton stated that a similar method was now employed by him at Oxford, and was useful for small lenses.—Prof. Fitzgerald, of Dublin, showed mathematically that it was impossible for a small charge of static electricity, carried along by the earth, to move a magnet in its neighbourhood. Prof. Ayrton questioned this conclusion, and exhibited an apparatus intended to test the point experimentally.—The meeting was then adjourned till April 22.

Anthropological Institute, March 21.—Major-General Pitt-Rivers, F.R.S., president, in the chair.—The following new Members were announced:—Messrs. Francs Archer, William A. L. Fox Pitt, W. E. Maxwell.—Mr. Worthington G. Smith

exhibited a measured transverse section through 300 feet of the Palæolithic floor of the Hackney Brook, near Stoke Newington Common. He also showed a collection of ovato-acuminate implements, scrapers, flakes and nuclei from the same spot, all the objects being lustrous and as sharp as on the day they were made. General Pitt-Rivers exhibited and described a large collection of padlocks, showing that the same type had been used in civilised countries from the earliest ages.—Mr. A. L. Lewis read a paper on the relation of stone circles to outlying stones or tumuli or neighbouring hills. The author, from an examination of eighteen stone circles in southern Britain, showed that their builders had in various ways made special references to different points of the compass, but most particularly to the north-east. He then showed from a number of independent sources, ranging from the Prophet Ezekiel down to a foreign correspondent of the *Daily News*, that other ancient structures had similar references, known to have arisen in connection with times and seasons, and various forms of nature worship; that practices connected with such worships, and especially with sun and fire worship, have come down, even in this country, to the present time; and that circular buildings and open circles have been, and are used for worship of this kind; and inferred from these facts that the British stone circles were used for sun worship, probably in the Druidic period. He then dwelt on the references to the North and East in the orientation of English churches, which he thought to be derived from the references to those quarters in the circles, as the Papal churches, whether in Rome or London, are not so placed; and he gave some curious details on this point, and concluded by drawing attention to the firm root taken by Christianity in the Druidic countries of Gaul and Britain, and the great influence exercised by those countries in the later Roman empire, and especially in the establishment of Christianity as the State religion.—A paper was read by Mr. J. E. Price, on excavations of tumuli on the Brading Downs, Isle of Wight, by himself and Mr. F. Hilton Price.

Royal Horticultural Society, March 14.—Dr. M. T. Masters in the chair.—*Australian Fungi:* Mr. W. G. Smith exhibited dried specimens and drawings of grasses attacked by a fungus, from Sussex, and especially Kent, probably new to Britain. It was only known a little more than two years ago. It appears to attack species of *Festuca* chiefly, and is most abundant on sandy soils, not uncommon on chalk, but not on clay. The Rev. M. J. Berkeley described and figured it amongst Australian fungi in the *Journal* of the Linnean Society, 1873, xiii. p. 175, and named it *Isaria fuciformis:* Dr. Cooke now regards it as British. It is said to cause the death of animals browsing upon the grass infected with it.—*Disease of Thujas:* Mr. Smith also exhibited specimens of *T. compacta*, attacked by the Australian fungus, *Capnodium australe*, of Dr. Montague.—*Rhododendrons:* Mr. Mangles exhibited several true species from Sikkim.—*Fritillaria obliqua*, &c.: Several plants were exhibited by Mr. Elwes.—*Leucojgum æstivum*, var., from South France, which flowers two months earlier than the commonform; *Chionodoxa*, var., from self-sown seeds which blossom in two years; Mr. Elwes remarked that its habit has changed, inasmuch as it comes up rapidly and blossoms as soon as the snow is off in Asia Minor, whereas here its progress is delayed to a much longer period, and it is getting longer in this respect every year; *Korolkowia Sewerzovii*, sport., a remarkable *green* flowered branch from what is normally a purple flowering plant. *Tulipa Greggii*, Mr. Elwes remarked how the colour appears to be fading under cultivation.—Dr. Masters exhibited specimens of cones, &c., from trees grown by Mr. Veitch:—*Abies* (*Picea*) *grandis*, *Pinus tuberculata*, the scales being unequally developed on opposite sides of the cone; the seeds of which are believed only to escape after forest fires have taken place. They hang on the trees in many generations even for thirty years.—*Welwitschia seedling*. He also exhibited a dried specimen of a germinating *W. mirabilis*, showing the two cotyledons (deciduous), and the two next pair of (persistent) leaves.—A botanical certificate was awarded to Mr. Veitch for *Pleurothallis glossopogon*, remarkable among its genus for its large flowers, the segments of which are 3 inches in length, broad at the base, and prolonged into a very long slender tail, as in some of the Masdevallias. The lip is small, oblong, chocolate-coloured, with a fringe of hairs at the tip. A similar award was made to him for the beautiful orchid, *Spathoglottis lobbi*, a plant with a very slender wiry flower-stalk, with a single flower, 1½ inch in diameter, clear canary yellow, with broad ovate segments, and a lip with a narrow stalk, and a spoon-shape blade.

EDINBURGH

Royal Socety, March 20.—Prof. Douglas Maclagan, vice-president, in the chair.—Prof. Geikie read a paper on the remarkable series of Carboniferous rocks which are developed in Eskdale and Liddesdale, in the south of Scotland. They form a continuous succession from the volcanic band of porphyrite which overlies the Upper Old Red Sandstone to the Scar limestone of Northumberland. Eleven distinct zones were particularised, of which the fourth and sixth were volcanic (tuff, porphyrite, &c.) These two zones were separated by a bed of fine grey shale, rich in specimens of such marine organisms as Orthoceras, Lingula, Discina, &c., mingled with the remains of fishes, crustaceans, scorpions, and, especially in the upper part, algæ, ferns, lycopods, and other carboniferous plants. Above the latest volcanic platform comes the Gilnockie marine limestone group, which is very similar in appearance and in its fossil contents to the ordinary Carboniferous limestone. This zone dies out to the north-east in Liddesdale, where the cement stone group of Tarras (zone No. 2 of the series) passes into the upper cement stone group (No. 9). The Canobie coal group forms the eighth zone, and, notwithstanding its low position in the Carboniferous series, contains plants of true coal-measure type. Above the upper cement stone group come the Plashetts and Lawsburn coals, which are succeeded on the southern margin of Liddesdale by a conspicuous group of sandstones—the "Fell sandstones." The central part of the thick cement stone groups of Upper Liddesdale must be referred to the same horizon as the Gilnockie limestone; so that the Scottish cement stone group differs from the lower Carboniferous limestones of England in being less marine.—This paper was succeeded by more special papers descriptive of the fossils which have recently been discovered in these Eskdale and Liddesdale rocks: Dr. Traquair treating of the fossil fishes, Mr. B. N. Peach of the Crustacea and Arachnida, and Mr. R. Kidston of the fossil Plants. Several beautiful specimens of scorpions were exhibited.—Dr. J. J. Dobbie and Mr. G. G. Henderson, B.Sc., communicated a paper on the formation of serpentine from dolomite. That such a transformation is probable, had been recognised by many geologists and chemists; but no attempt had been made to point out the precise reactions involved. The explanation given by the authors was as follows: Carbonate of magnesia decomposes at a much lower temperature than carbonate of lime; and hence, in a rock containing these together with silica, and heated to a sufficiently high temperature, the carbonate of magnesia decomposes, silicate of magnesia is formed, the carbonic acid is taken up by water, and so acts as a solvent on the carbonate of lime. Where no water is present, of course the last is not removed.

VIENNA

Imperial Institute of Geology, March 21.—The following papers were read:—C. I. Griesbach, geological sketches from India.—E. Doell, on a fall of meteorites in Europe, and on the shape of the meteorites that fell near Mocs on February 7.—H. v. Foullon, on the eruptive rocks of Montenegro.—R. Zuber, geological notes on the Carpathian mountains of Eastern Gallicia.

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